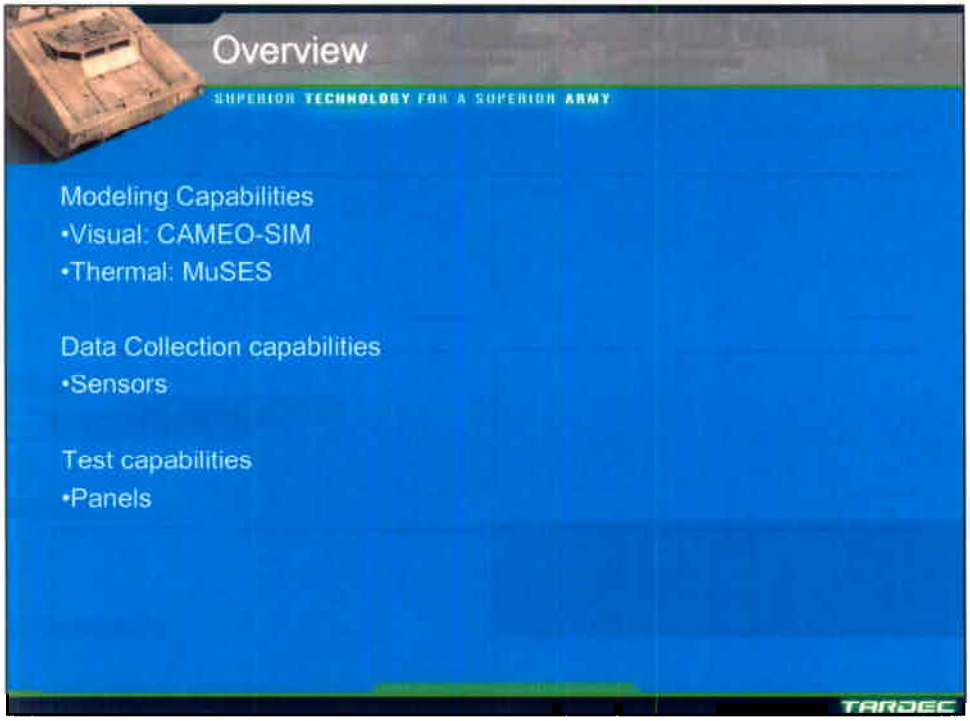
15540


TARDEC
James Mason
Testing and Modeling Capabilities
Brief introduction to our capabilities.
Systems Concepts and Integration (SCI) Panel
SCI-179/RTG-044 on Utilization/Dynamic Control of Adaptive Camouflage Materials
14 February 2006 – 17 February 2006
TARDEC
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY


Overview
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY
Modeling Capabilities
•Visual: CAMEO-SIM
•Thermal: MuSES
Data Collection capabilities
•Sensors
Test capabilities
•Panels
TARDEC

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
12 FEB 2006	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Testing and Modeling Capabilities	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
Mason;James	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
US Army RDECOM-TARDEC 6501 E 11 Mile Rd Warren, MI 48397-5000	**15540**
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	TACOM/TARDEC
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)
	15540

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES
The original document contains color images.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**SAR**	**5**	

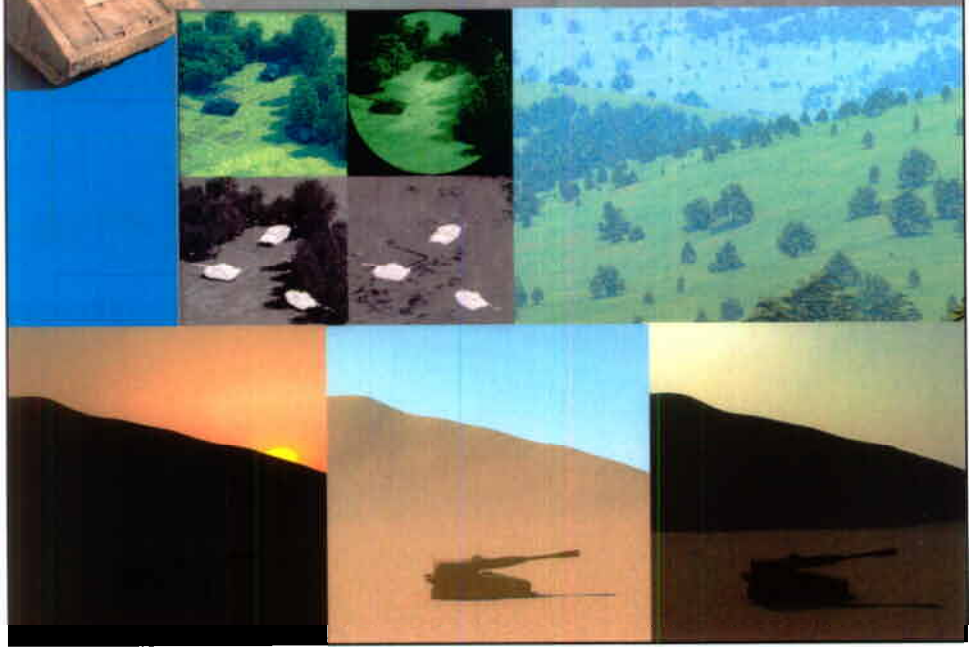
CAMEO-SIM Capabilities

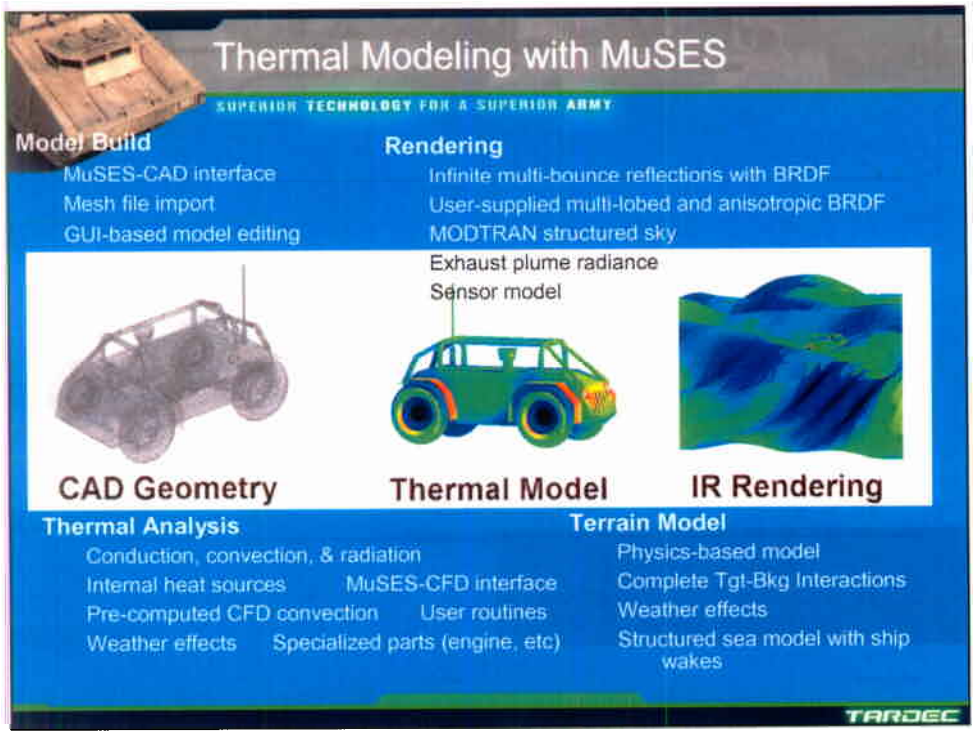
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

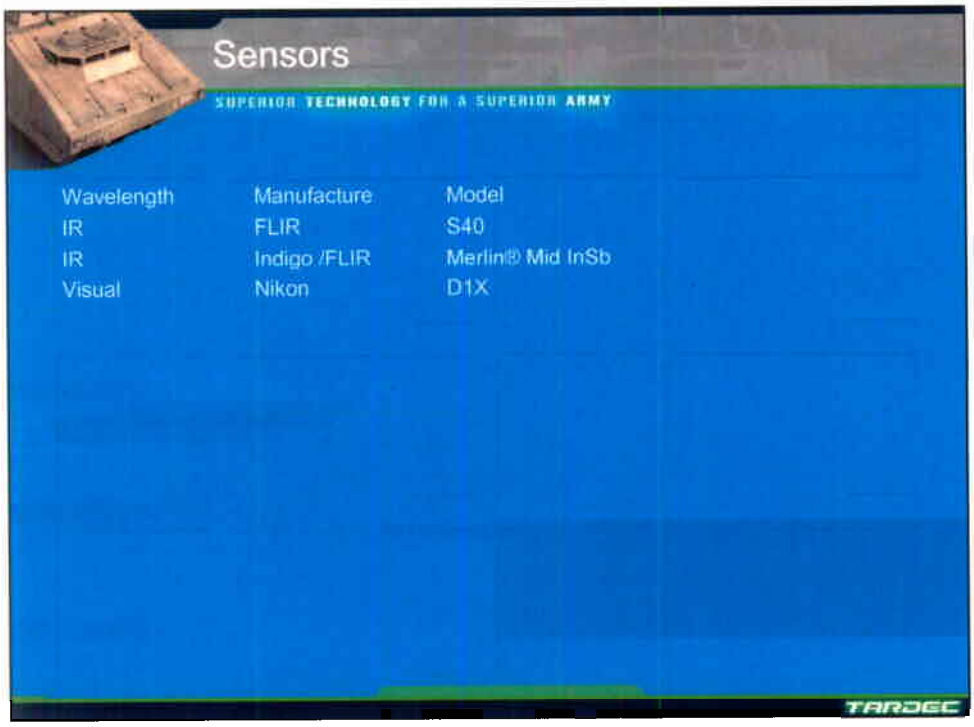
- Predictive software
- Creates and renders physics based synthetic scenes
  - High fidelity spectral imagery
  - Optimized for high polygon scenes and parallel processing
- Has been developed specifically for military applications
- Renders thermal reflections and thermal shadows
  - However, limited thermal prediction capability
- Bi-directional reflectance (BRDF) and directional emittance
- Spectral reflectivity, refractivity, absorptivity, and transmissivity

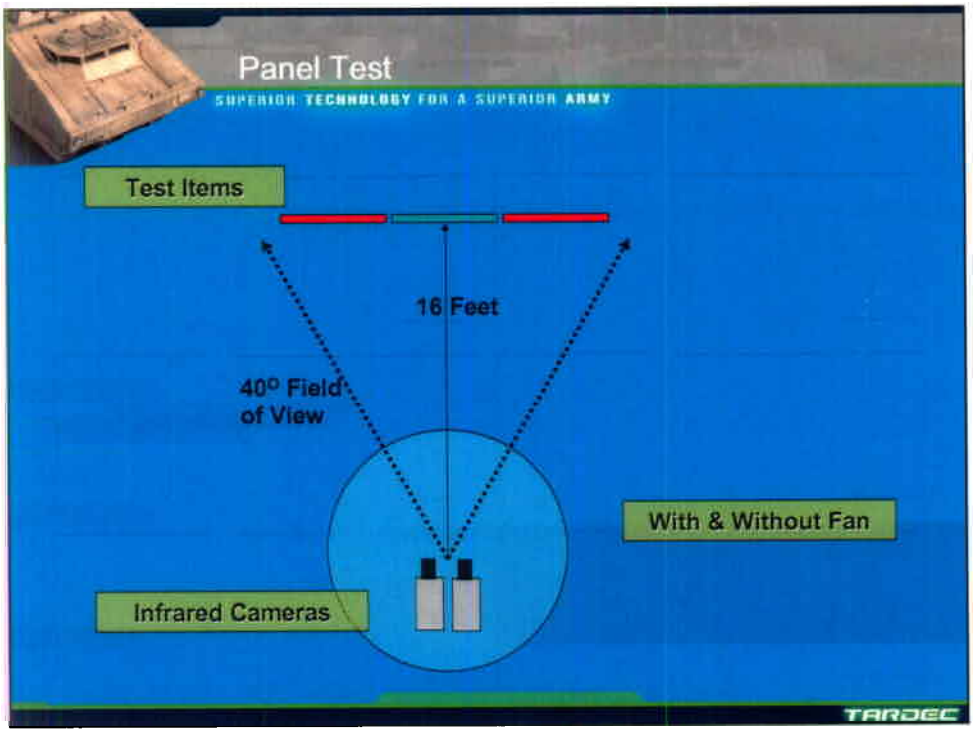
TARDEC

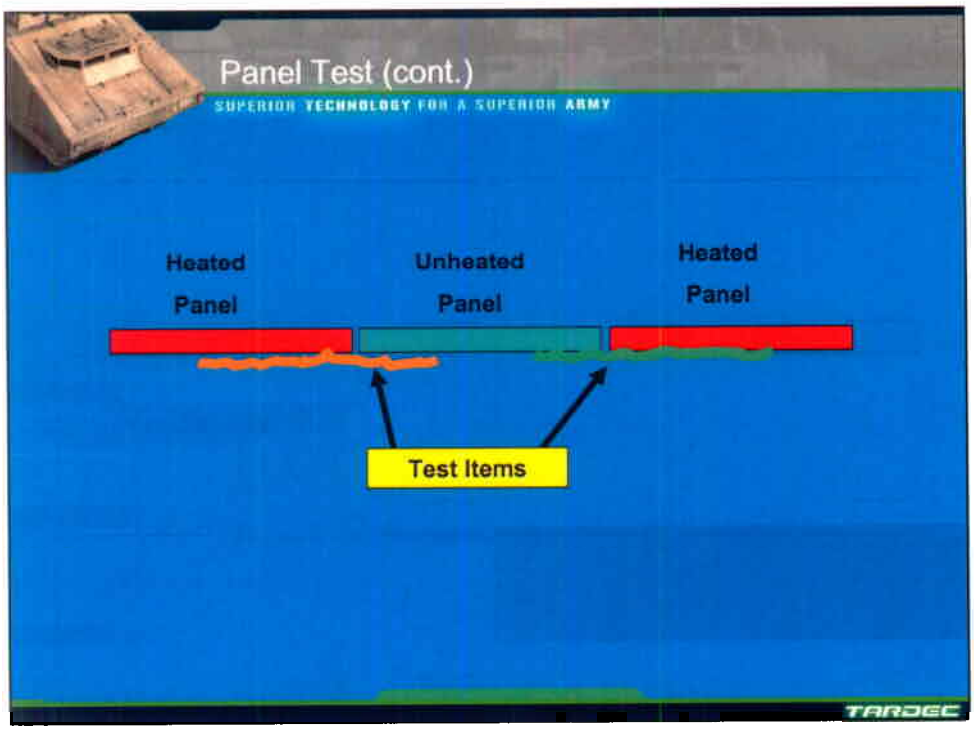
CAMEO-SIM Screenshots




Thermal Modeling with MuSES
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY
Model Build
MuSES-CAD interface
Mesh file import
GUI-based model editing
Rendering
Infinite multi-bounce reflections with BRDF
User-supplied multi-lobed and anisotropic BRDF
MODTRAN structured sky
Exhaust plume radiance
Sensor model
CAD Geometry
Thermal Model
IR Rendering
Thermal Analysis
Conduction, convection, & radiation
Internal heat sources
MuSES-CFD interface
Pre-computed CFD convection
User routines
Weather effects
Specialized parts (engine, etc)
Terrain Model
Physics-based model
Complete Tgt-Bkg Interactions
Weather effects
Structured sea model with ship wakes
TARDEC

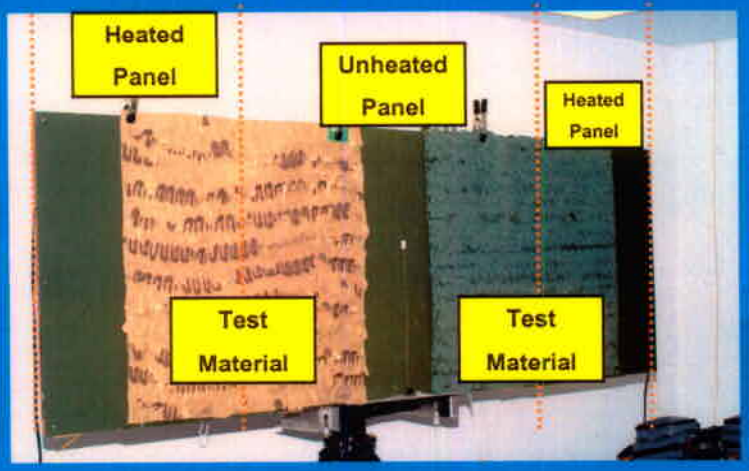

Sensors
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY
Wavelength
Manufacture
Model
IR
FLIR
S40
IR
Indigo /FLIR
Merlin® Mid InSb
Visual
Nikon
D1X
TARDEC


Panel Test
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY
Test Items
16 Feet
40° Field of View
With & Without Fan
Infrared Cameras
TARDEC


Panel Test (cont.)
SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY
Heated Panel
Unheated Panel
Heated Panel
Test Items
TARDEC

Panel Test (cont.)

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY



TARDEC

Review

SUPERIOR TECHNOLOGY FOR A SUPERIOR ARMY

Modeling Capabilities
- Visual: CAMEO-SIM
- Thermal: MuSES

Data Collection Capabilities
- Sensors

Testing Capabilities
- Panels

TARDEC